25X1 [redacted]

REASON 3d(3)

SPECIAL HANDLING

ARMY

ENGINEER GEODESY, INTELLIGENCE AND MAPPING RESEARCH AND DEVELOPMENT AGENCY
Fort Belvoir, Virginia

1801 — 17 August 1960

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MEMORANDUM FOR: [redacted] Special Projects, ODDRE

SUBJECT: Tentative Performance Requirements for ARGON

1. Work statement and tentative Performance Requirements for ARGON photo products are attached as Inclosure 1. Since the requirements are tentative, the cost, equipment and manpower estimates that the contractor produces will be approximate and subject to change as the requirements become final. Paragraph 2.1 indicates the priority scheduling of the original film, gives the total duplicates required, and shows where the duplicates are to be sent.

2. The results of the many tests conducted by AMS indicate that the duplicate films should be made on a step-and-repeat type printer, using a print or distant light source so that high resolution and dimensional stability are realized. Current plans are to duplicate the original film reasonably soon after processing.

3. Because of the excessive length and weight of the original film and ease of handling the film in the laboratory, we are planning to cut the 4000-foot roll into approximately ten 400-foot lengths. For data reduction usage, the original film will be cut and reeled by passes.

4. It has not been possible to determine conclusively that the duplicates from the "A" negatives will adversely affect the data reduction phases of the "A" program. We have, however, conducted a sufficient number of simulated laboratory experiments with available materials and equipment to report that the best materials and equipment and procedures will be used. The users can be assured that all precautions are being taken to guarantee high quality "A" products. The processing people are well aware of the value and delicate nature of the original film and the duplicate products. The importance of quality is being stressed in all phases of the "A" program. In regard to this work statement, the facilities and personnel of contractor are considered more than adequate to produce our ARGON high quality photo products.

1 Incl
Work Statement and Tentative Performance Requirements for ARGON-Photo-Products

Department of Advanced Research

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ARMS-0036, Cy 2

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WORK STATEMENT

AND

TENTATIVE PERFORMANCE REQUIREMENTS

FOR

ARGON-PHOTO-PRODUCTS

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1. Purpose - The purpose of this work statement is to provide the contractor with the photo-product requirements of the ARGON program. Since the requirements are tentative, the cost, equipment and manpower estimates that result from these performance requirements will also be tentative and subject to change as the requirements become final.

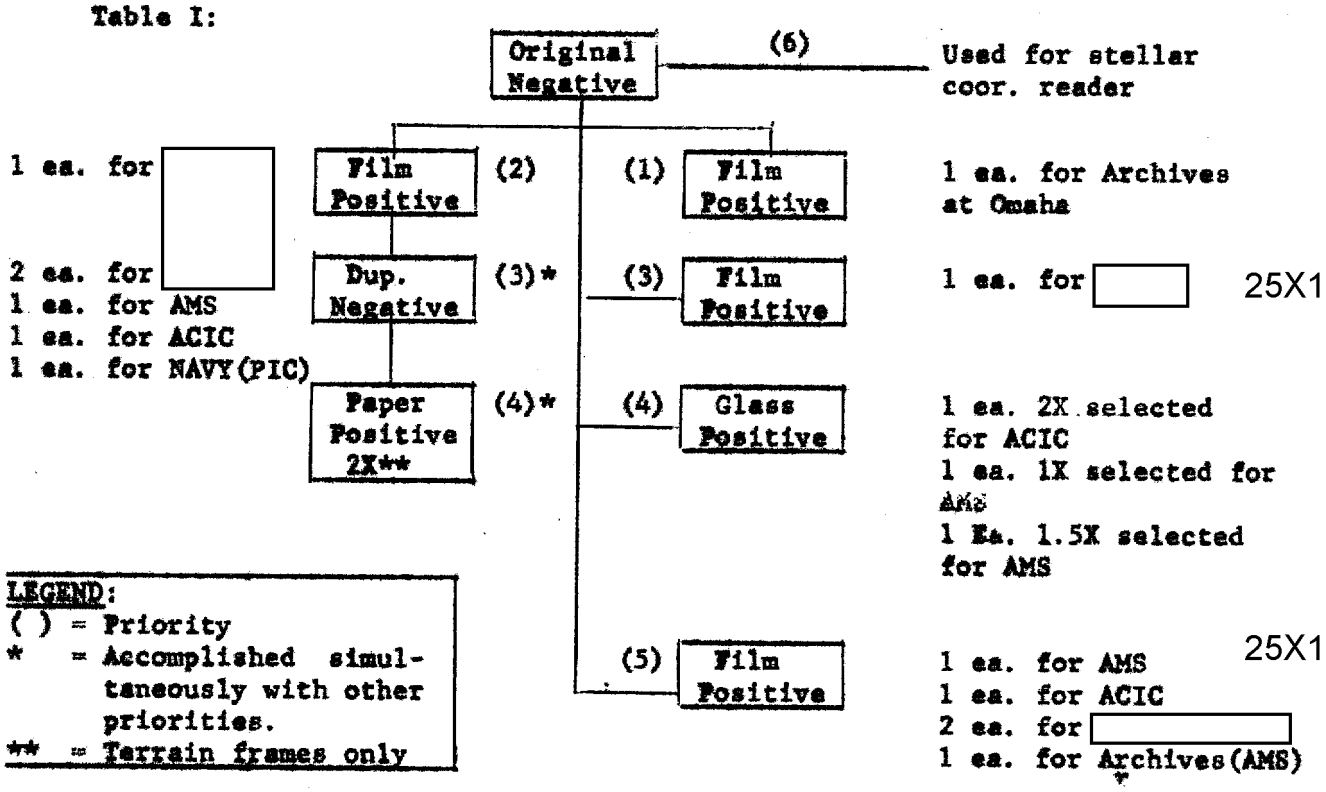
2. Products - The photo-products for the ARGON program resulting from one set of recovered data are:

Duplicate Positives	8 sets
Duplicate Negatives	5 sets
Paper Prints (2x magnification)	1 set
Glass Diapositives (2x magnification)	1000 each
Glass Diapositives (1.5x "	600 each (same
Glass Diapositives (contact)	600 each (frames)

The contractor will supply the glass plates, film and packaging containers. The priority scheduling of production is shown in paragraph 2.1 below. This flow diagram also shows where the duplicates are to be sent.

2.1 Film Flow Diagram

Table I:



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3. Control Numbering System - The basic control number will consist of the bird, pass and frame number (BPF) and will be placed on each frame of the original negative before accomplishing any reproduction. This numbering will be done by the contractor on G.F.E. The same control (BPF) number will be placed near the stellar and terrain exposures. They may be exposed simultaneously or separately. Responsibility for identifying the proper terrain and stellar number rests with the Government.

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3.1 Control Numbers - Security control numbers will consist of the following discrete numbers:

BIRD	PASS	FRAME	GENERATION	COPY NO.
0	00	000 (T or S)*	0-Original Neg. 1-Master Pos. (film or glass) 2-Dupe Neg. 3-Dupe Pos. 4-Paper Print.	0,1,2,3,etc.

3.1.2 Individual frames will be accounted for in the above manner when detached as separate items, such as glass plates, film chips, prints, etc. Packages of groups of individual frames, unless they are all of a series in succession, will be accompanied by a list of the BPF numbers included in the package.

3.1.3 The 6-foot leader and trailer of roll material, and label on packaged roll material, will contain the same number as indicated above for beginning of the roll with the addition of a second line to show end of roll. (*Since the roll film must be cut between a simultaneously exposed terrain and stellar exposure and the frame numbers are identical, in the case of roll material the letters "T" or "S" will indicate that the roll starts or ends with a terrain or stellar frame respectively.).

4. Processing - The contractor shall develop the original film in a continuous type, automatic processor and dryer. The film will be developed to the terrain exposure to within plus or minus one aperture stop. Conventional photographic humidity and temperature controls are adequate for producing the quality photo products for the "A" program. The original film after development shall be cut into approximately 400-foot rolls for ease in handling in the laboratory.

4.1 Quality Control - The sun angle for each pass will be supplied to the contractor 6 hours prior to processing time of the original film. Since the quality of the original negative may not be optimum in exposure-illumination, etc., the following performance requirements are considered desired goals.

4.1.1 Gamma Strip - A 20-step, calibrated step tablet shall be exposed at the beginning and end of each roll of film duplicated.

4.1.2 Resolution - A standard AF 228 line, high contrast resolution target (/2) shall be exposed at the beginning and end of each roll of film duplicated.

4.1.3 Base Density - For the production of glass diapositives, the base density shall not exceed 0.1. The density range of any single frame in high light and the shadow areas shall be 0.35 minimum to 1.5 maximum. The density range for film duplicates shall be 0.35 min. to 2.5 max. at a gamma of 1.0.

4.1.4 Waxing - All duplicate and original films shall be waxed.

4.2 Diapositives - The frames to be printed will be selected after the original film is numbered and indexed on map overlays by Bird, Pass and Frame (BPF). Approximately 2200 glass diapositive will be printed. The specifications for the 9.5" x 9.5" glass diapositives are MIL-P-4798 (USAF), as amended and to include a surface flatness of 0.00002" linear inch.

4.2.1 Enlarging Printers - The Government shall furnish the necessary enlarging printers and be responsible for their calibration. Actual setting of the magnification factors shall be done by a Government representative before shipping the printers to the contractor. The contractor will record on the glass diapositive edge the magnification factors used and the BPF data.

4.2.2 Contact Plates - The contractor shall use conventional contact type printers, provided they possess point or distant light sources. The glass diapositive specifications for these plates are the same as the preceding paragraph, except for dimension. 5" x 5" diameter plates are required but 9.5" size plates may be used if 5" plates are not available.

4.3 Paper Prints - One set of two diameter, positive, paper prints is required (approximately 3300 prints). They may be produced on the contractor's conventional enlarging printers on single weight, glossy paper. Quality control standards are to be exercised to insure maximum resolution.

4.4 Duplicate Films - All duplicate films shall be produced on E.K. 5427, Topo Base, 5¼ mil thick, 5" wide, with Pelloid backing. A 6-foot leader and trailer will be left on all film produced.

4.4.1 Positives - A step-and-repeat type printer shall be used. Three positive prints shall be printed reasonably soon after processing of the original negative. The second positive print is used to immediately process the duplicate negatives and paper prints (see paragraph 4.4.2). One or more frames may be printed at a single exposure. In multiple or single frame exposing, the advancing of the original negative and duplicate film may not be precisely metered, thus causing a small amount of double exposure. This is acceptable provided the data that are double exposed appears in the preceding frames. Under no circumstance will any data be lost by double exposure or film metering.

4.4.2 Negatives - These prints may be produced on an automatic roll processor and dryer. Five negatives will be produced from master positive print #2.

5. Film Cleaning - The contractor shall clean the original film as often as deemed necessary to produce quality duplicates.

6. Spooling:

Film Spooling - The original negatives shall be spooled on [redacted] 25X1 special spools after completion of duplicate positives. Duplicate negatives and positives shall be spooled on standard E.K. spools.

7. Security (personnel) - The responsibility for security rests with "Headquarters".

7.1 Visits to Contractor - All personnel visiting the contractor must be cleared through HQ. Names of individuals permitted to make visits to the contractor will be given the contractor by HQ. All visitors to the contractor will be met and directed to the proper location by HQ or their official designate.

8. Preparation for Delivery:

Labeling - The packaged materials shall be labeled as follows:

Control No._____ O. Neg.
Mission #_____ Date _____ Pass _____
Roll or Box_____ Of_____Frames___To___

Printed in Green

Control No._____ D. Pos.
Mission #_____ Date ____Pass_____
Roll or Box_____Of_____Frames____To_____

Printed in Red

Control No._____ D. Neg.
Mission #_____ Date _____ Pass _____
Roll or Box_____Of_____Frames____To_____

Printed in Yellow

Control No._____ Prints
Mission #_____Date_____ Pass_____
Roll or Box_____Of_____Frames____To_____

Printed in Black